



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/014,619

12/10/2001

Paul L. Frattini

58113/344966

4759

71939

7590

03/19/2008

ELECTRIC POWER RESEARCH INSTITUTE
C/O KILPATRICK STOCKTON LLP
1001 WEST FOURTH STREET
WINSTON - SALELM, NC 27101

EXAMINER

PALABRICA, RICARDO J

ART UNIT

PAPER NUMBER

3663

MAIL DATE

DELIVERY MODE

03/19/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/014,619	Applicant(s) FRATTINI ET AL.	
	Examiner Rick Palabrica	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/17/08 RCE and 11/13/07 Amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21,24-26,29-35 and 37-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21,24-26,29-35 and 37-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>/</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114.

Applicant's submission filed on 1/17/08, which included new documents for consideration by the Office, has been entered.

Information Disclosure Statement

2. The non-English language non-patent literature Nos. 3-6 in the information disclosure statement filed 1/17/08 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. These documents have been placed in the application file, but the information referred to therein has not been considered.

For example, said IDS states:

"Non-Patent Literature, Cite #3, is a Response to Office Action dated January 5, 2007 entered in a related Czech Republic Patent Application Number PV 2002-1081, now Patent No. 29803."

This statement is not a proper explanation of relevance because it does not point to similarities between the item of information and the claimed invention. See MPEP 609.04(a) III.

The same remark applies to Cite #4-6.

Claims Previously Allowed, Now Rejected, New Art

3. The indicated allowability of the claims in the 12/10/07 Notice of Allowability is withdrawn in view of the newly discovered combination of reference(s), as indicated below. Rejection(s) based on the newly cited reference(s) follow.

Response to Arguments

4. Applicant's 11/13/07 Amendment traversed the objection to the drawings under 37 CFR 1.83(a) in the 7/12/07 Office action. Applicant argues that:

"MPEP 608.02 states that '35 U.S.C. 113 requires a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention'. ... [T]he original specification describes the feature of the claims with enough clarity so as to enable one skilled in the art to implement the feature." See paragraph bridging pages 8 and 9 of said Amendment.

The examiner disagrees. 35 U.S.C. 113 pertains to Rule 81 not to Rule 83 that was invoked by the examiner. Note the following:

37 CFR 1.81 Drawings required in patent application.

(a) *The applicant for a patent is required to furnish a drawing of his or her invention where necessary for the understanding of the subject matter sought to be patented; this drawing, or a high quality copy thereof, must be filed with the application. Since corrections are the responsibility of the applicant, the original drawing(s) should be retained by the applicant for any necessary future correction.*

(b) *Drawings may include illustrations which facilitate an understanding of the invention (for example, flow sheets in cases of processes, and diagrammatic views).*

Art Unit: 3663

(c) *Whenever the nature of the subject matter sought to be patented admits of illustration by a drawing without its being necessary for the understanding of the subject matter and the applicant has not furnished such a drawing, the examiner will require its submission within a time period of not less than two months from the date of the sending of a notice thereof.*

(d) *Drawings submitted after the filing date of the application may not be used to overcome any insufficiency of the specification due to lack of an enabling disclosure or otherwise inadequate disclosure therein, or to supplement the original disclosure thereof for the purpose of interpretation of the scope of any claim.*

The above rule is distinct from:

37 CFR 1.83 Content of drawing.

(a) *The drawing in a nonprovisional application must show every feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box). In addition, tables and sequence listings that are included in the specification are, except for applications filed under 35 U.S.C. 371, not permitted to be included in the drawings.*

Drawings

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the plurality of transducers positioned along the entire length of the housing (e.g., see claims 24, 26, and 38) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 21, 24, 29, 31, 32, 37, 38, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of John, Jr. et al. (U.S. 4,966, 177) [either alone or in combination with any one of Spenke (U.S. 3,658,643) or Moon (U.S. 3,793,832) or Robertson (U.S. 3,290,224)], or Fields et al. (U.S. 4,372, 787) [either alone or in combination with John, Jr. et al.] or Minoru et al. (JP 9220545) [either alone or in combination with John, Jr. et al.], and further in view of Walter et (U.S. 5,200,666). Anyone of John, Jr. et al. or Fields et al. or Minoru et al. disclose the applicant's claims except for configuration of the transducers.

John, Jr. et al.

As to claims 21, 24, 31 and 37, applicant's claim language "elongated housing having an opening at a first end and a length" reads on John, Jr. et al.'s cleaning tank 48 (see Fig. 3 and col. 4, lines 52+). They teach a plurality of ultrasonic transducers 46 attached to the entire length of tank 48.

As to the limitation, "opening is configured to receive, and said length is configured to be at least as long as, said assembled irradiated nuclear fuel assembly," applicant has not defined the exact dimensions (i.e., length, width, thickness), shape, and form of the so-called irradiated nuclear fuel assembly. Absent such definition, the examiner interprets the term broadly and reads it on any and all irradiated nuclear fuel assemblies. John, Jr.'s system ultrasonically cleans fuel rods of pressurized water reactors (see Fig. 1). Thus, it is capable of receiving fully assembled irradiated nuclear CANDU fuel assemblies, which are shorter than PWR fuel assemblies (see Figs. 3-5).

Walter et al. teach an ultrasonic transducer comprising an elongated rod having a length that is an integral multiple of $\frac{1}{2}$ a predetermined wavelength (see col. 1, lines 54+). They also teach that their invention can emit twice the amount of ultrasonic energy compared to other transducers with the same geometric dimensions (see col. 2, lines 1+). Their transducer "eliminates to a large degree longitudinally emitted vibration and the resulting losses" (see col. 1, lines 44+). Their transducer comprises a first end, a second end and a rod disposed between the two ends.

Applicant himself admits that he uses the Walter et al. transducers that are omnidirectional (see paragraph bridging pages 5 and 6 of the specification).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by John, Jr. et al., by the teaching of Walter et al., to gain the advantages thereof (i.e., effective and efficient ultrasonic cleaning), because such modification is no more than the use of a well known expedient within the art.

Additionally, the claim would have been obvious because a person of ordinary skill has good reasons to pursue the known options within his or her technical grasp based on the teaching of Walter et al. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

If applicant is of the opinion that John, Jr. et al. does not teach an assembled irradiated nuclear fuel assembly because they their apparatus is depicted as cleaning individual fuel rods, the claim is still unpatentable in vie of any one of Spenke (U.S. 3,568,643) or Moon (U.S. 3,793,832) or Robertson (U.S. 3,290,224). Each of these references teaches an assembled nuclear fuel assembly comprising a single tubular fuel element, and this single element configuration is maintained even after the element is used and irradiated in a nuclear reactor. See Figs. 3a and 3b in Spenke, Fig. 6 in Moon or the figure in Robertson. Applicant has not defined the term, “assembled”, and absent such definition, the examiner interprets the term broadly and reads it on “as manufactured” or “as completed”. Any one of the single tubular fuel element of Spenke or Moon or Robertson meets the definition.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply the apparatus of John, Jr. et al., as modified

by the teaching of Walter et al., to the assembled irradiated fuel assemblies of any one of Spenke or Moon or Robertson because this is nothing more than applying an effective and efficient ultrasonic cleaning process to a well known configuration of an assembled irradiated nuclear fuel assembly comprising a single tube fuel element.

As to claim 29, the above applied art can be configured to receive an irradiated BWR nuclear fuel assembly and is therefore capable of being used in the same manner and for the same intended or desired use as the claimed invention. See section 7 below.

As to claims 32, 39 and 41, the above applied art meets the claim limitations in regard to the node structure because Walter et al. teach that their resonator 1 has a length of $\frac{1}{2}$ lambda or an integral multiple thereof (see col. 2, lines 63+).

Fields et al.

As to claims 21, 31 and 37, applicant's claim language "elongated housing having an opening at a first end and a length" reads on Fields et al.'s housing 12 having outer wall 14 and inner wall 16 (see Figs 1-5). They teach a transducer 34 attached to inner wall 18 of housing 12.

Note from the figures that housing 12 can be configured to receive assembled irradiated nuclear fuel assembly, e.g., the short CANDU fuel elements. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of the claims.

See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by Fields et al., by the teaching of Walter et al., to gain the advantages thereof (i.e., effective and efficient ultrasonic cleaning), because such modification is no more than the use of a well known expedient within the art.

As to claim 24 and the use of a plurality of transducers attached to the entire length of the housing, this would also be obvious to said artisan to achieve the maximum degree of cleaning of the assembly.

Alternatively, John Jr. et al. provides the necessary teaching that it is old and advantageous to use of a plurality of these ultrasonic transducers attached to the entire apparatus housing, and to further modify the Fields et al.- Walter et al. apparatus by the teaching of John, Jr. et al. would have been intuitively obvious to said artisan.

As to claims 29, 31, 32, 39 and 41, the modified Fields et al. apparatus meets the claim limitations for the same reasons as those given above for the modified John, Jr. et al. apparatus.

Minoru et al.

As to claims 21, 31 and 37, applicant's claim language "elongated housing having an opening at a first end and a length" reads on Minoru et al.'s cleaning tank 2 (see Figs 1-5). They also teach a plurality of transducers, i.e., ultrasonic oscillators 4, 5 and 6.

Note from the figures that cleaning tank 2 can be configured to receive assembled irradiated nuclear fuel assembly, e.g., the short CANDU fuel elements. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of the claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus, as disclosed by Fields et al., by the teaching of Walter et al., to gain the advantages thereof (i.e., effective and efficient ultrasonic cleaning), because such modification is no more than the use of a well known expedient within the art.

As to claim 24 and the use of a plurality of transducers attached to the entire length of the housing, this would also be obvious to said artisan to achieve the maximum degree of cleaning of the assembly.

Alternatively, John Jr. et al. provides the necessary teaching that it is old and advantageous to use of a plurality of these ultrasonic transducers attached to the entire apparatus housing, and to further modify the Minoru et al.- Walter et al. apparatus by the teaching of John, Jr. et al. would have been intuitively obvious to said artisan.

As to claims 29, 31, 32, 39 and 41, the modified Minoru et al. apparatus meets the claim limitations for the same reasons as those given above for the modified John, Jr. et al. apparatus.

7. The claims are directed to an apparatus and NOT to a process. However, the claims are replete with statements that are either essentially method limitations or statements of intended or desired use. For example, “for cleaning an assembled irradiated nuclear fuel assembly,” etc. These clauses, as well as other statements of intended use do not serve to patently distinguish the claimed structure over that of the reference, as long as the structure of the cited references is capable of performing the intended use. See MPEP 2111-2115.

See also MPEP 2114 that states:

A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531.

[A]pparatus claims cover what a device is, not what a device does.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525,1528.

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

The systems in the cited references are capable of being used in the same manner and for the intended or desired use as the claimed invention. Note that it is sufficient to show that said capability exists, which is the case for the cited references.

8. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of John, Jr. et al. (U.S. 4,966, 177) [either alone or in combination with any one of Spenke (U.S. 3,658,643) or Moon (U.S. 3,793,832) or Robertson (U.S.

3,290,224)], or Fields et al. (U.S. 4,372, 787) [either alone or in combination with John, Jr. et al.], and further in view of Walter et (U.S. 5,200,666). Anyone of John, Jr. et al. or Fields et al. or disclose the applicant's claims except for configuration of the transducers.

See section 6 above and Fig. 5 in John, Jr. et al. and Fig. 3 in Fields et al. for the configuration of transducers positioned parallel to the length of the housing.

9. Claims 30, 33 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of John, Jr. et al. [either alone or in combination with any one of Spenke or Moon or Robertson], or Fields et al. [either alone or in combination with John, Jr. et al.] or Minoru et al. [either alone or in combination with John, Jr. et al.], and further in view of Walter et al., as applied to claims 21, 24, 29, 31, 32, 37, 38, 39 above, and further in view of Kato et al. (U.S. 5,467,791) or Richardson et al. (U.S. 5,377,237) either alone or in combination. Anyone of modified John, Jr. et al. or modified Fields et al. or modified Minoru et al. disclose the applicant's claims except for configuration of the transducers.

Kato et al. teach an ultrasonic cleaning device for a nuclear fuel assembly (see Abstract and Figs. 1-12). They further teach the use of reflector 131 around the housing 127 of the apparatus to prevent leakage of ultrasonic waves (see col. 10, lines 25+).

Richardson et al. teach a method and apparatus for ultrasonic inspection of a tube component of a nuclear reactor (see col. 1, lines 1+, and Fig. 2). They utilize an air gap as an efficient reflector of ultrasound (see col. 2, lines 64+). They further teach how to create this air gap by a mechanical seal 20 (see col. 2, lines 60+ and Fig. 2).

One having ordinary skill in the art at the time of the claimed invention would have recognized that the primary and secondary references are in the same field of endeavor, i.e., application of ultrasonics.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use with the modified system or John, Jr. et al., or Fields et al., or Minoru et al., an inner reflector around the housing by the teaching of Kato et al., to gain the advantages thereof, (e.g., reduce leakage of ultrasonic waves), and include an air gap around said inner reflector, by the teaching of Richardson et al. (e.g., further reduce wave leakage), because such modification is no more than the use of well known expedients within the art. As to the outer reflector, this is inherent in the modification based on Richardson et al., because said outer reflector must be present to have an air gap around the inner reflector.

10. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minoru et al. [either alone or in combination with John, Jr. et al.], and further in view of Walter et al., as applied to claims 21, 24, 29, 31, 32, 37, 38, 39 above, and further in view of Kato et al. (U.S. 5,467,791) or Richardson et al. (U.S. 5,377,237) either alone or in combination. The modified Minoru et al. disclose the applicant's claims except for the reflector and the orientation of the transducers.

The modified Minoru et al. teach the use of ultrasonic omnidirectional transducers on each of the four sides of a specimen (see Abstract and figure).

Kato et al. and Richardson et al., along with the teachings on the advantage of using reflectors have been discussed in section 9 above.

The advantage of having a plurality of transducers and their positioning along the elongated housing has also been discussed in section 3 above.

Therefore, it would have been intuitively obvious to one having ordinary skill in the art at the time of the claimed invention, to have a first subset of a plurality of ultrasonic omnidirectional transducers positioned on said elongated housing and configured to be adjacent a first side of an assembled irradiated nuclear fuel element, second subset of a plurality of ultrasonic omnidirectional transducers positioned on said elongated housing and configured to be adjacent a second side of an assembled irradiated nuclear fuel element, a third subset of a plurality of ultrasonic omnidirectional transducers positioned on said elongated housing and configured to be adjacent a third side of an assembled irradiated nuclear fuel element, a fourth subset of a plurality of ultrasonic omnidirectional transducers positioned on said elongated housing and configured to be adjacent a fourth side of an assembled irradiated nuclear fuel element, as well as reflectors, as recited in the claims, to gain the advantages thereof (e.g., provide more effective and efficient ultrasonic cleaning), because such modification is no more than the use of a well known expedient within the art.

Conclusion

Art Unit: 3663

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rick Palabrica/
Primary Examiner, Art Unit 3663

March 18, 2008